

Inspector General

United States

Department *of* Defense



American Recovery and Reinvestment Act Wind
Turbine Projects at Long-Range Radar Sites
in Alaska Were Not Adequately Planned

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Acronyms and Abbreviations

AFCESA	Air Force Civil Engineer Support Agency
CES	Civil Engineer Squadron
DUSD (I&E)	Deputy Under Secretary of Defense (Installations and Environment)
ECIP	Energy Conservation Investment Program
FAR	Federal Acquisition Regulation
FBO	Federal Business Opportunities
LCC	Life-Cycle Cost
LRRS	Long-Range Radar Site
OMB	Office of Management and Budget
SIR	Savings-to-Investment Ratio
TAFS	Treasury Appropriation Fund Symbol



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-4704

September 30, 2011

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE
(INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE
(FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: American Recovery and Reinvestment Act Wind Turbine Projects at
Long-Range Radar Sites in Alaska Were Not Adequately Planned
(Report No. D-2011-116)

We are providing this report for review and comment. We determined that 611th Civil Engineer Squadron personnel did not ensure that the three wind turbine projects, each valued at \$4.7 million, were adequately planned and supported. We performed this audit in response to the requirements of Public Law 111-5, "American Recovery and Reinvestment Act of 2009," February 17, 2009. We considered management comments on a draft of this report when preparing the final report.

DoD Directive 7650.3 requires that recommendations be resolved promptly. The Department of the Air Force comments were partially responsive. As a result of Air Force comments, we revised Recommendation 2. The Deputy Under Secretary of Defense (Installations and Environment), did not comment on a draft of this report. We request the Deputy Under Secretary of Defense (Installations and Environment) comment on revised Recommendation 2 by October 31, 2011.

If possible, please send a .pdf file containing your comments to audyorktown@dodig.mil. Copies of the management comments must contain the actual signature of the authorizing official for your organization. We are unable to accept the /Signed/ symbol in place of the actual signature. If you arrange to send classified comments electronically, you must send them over the SECRET Internet Protocol Router Network (SIPRNET).

We appreciate the courtesies extended to the staff. Please direct questions to me at (703) 604-8866 (DSN 664-8866).

Alice F. Carey
Assistant Inspector General
Readiness, Operations, and Support



Results in Brief: American Recovery and Reinvestment Act Wind Turbine Projects at Long-Range Radar Sites in Alaska Were Not Adequately Planned

What We Did

Our objective was to review the planning, funding, initial project execution, and tracking and reporting of the Energy Conservation Investment Program wind turbine projects, each valued at \$4.7 million, at the long-range radar sites at Cape Lisburne, Cape Newenham, and Cape Romanzof, Alaska. We determined whether Air Force personnel complied with the Act's requirements, Office of Management and Budget (OMB) Memorandum M-09-10, "Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009," February 18, 2009, and subsequent related guidance.

What We Found

Personnel at the 611th Civil Engineer Squadron (CES) did not ensure the wind turbine projects were properly planned and supported to meet the minimum savings-to-investment ratio (SIR) and payback criteria because of multiple turnovers in project managers and a loss of project files. Additionally, before the projects were selected for American Recovery and Reinvestment Act of 2009, (Recovery Act) funding, personnel at the 611th CES did not first ensure that wind studies had been completed and therefore, that the projects were shovel-ready.* As a result, DoD cannot ensure that the projects are viable, that the Deputy Under Secretary of Defense (Installations and Environment) [DUSD (I&E)] appropriately selected the projects for Recovery Act funding, and that Recovery Act funds were appropriately used.

Air Force personnel distributed funds to the Air Force Civil Engineer Support Agency (AFCESA) for the wind turbine projects in a timely manner, and the funding authorization documents properly identified a Recovery Act designation. Although contracting personnel at the AFCESA ensured that contracting actions for the wind turbine projects generally were executed appropriately, they originally cited an

incorrect appropriation to award the task order.

Finally, the contractor reported the required information for Recovery Act recipients; however, the contractor originally reported an incorrect Treasury Appropriation Fund Symbol to the www.recovery.gov Web site. As a result of our review, officials at the AFCESA took action to correct those errors.

What We Recommend

We recommend that the Air Force prepare supporting documentation, including the results of the 1-year wind studies, and revalidate the discounted payback periods and SIRs on the Life-Cycle Cost (LCC) analyses. We recommend that the DUSD (I&E) cancel the wind turbine project at Cape Newenham and work directly with the Air Force to validate the LCC analyses for the wind turbine projects at Cape Lisburne and Cape Romanzof. We also recommend that the DUSD (I&E) determine the best course of action for the construction of the Cape Lisburne and Cape Romanzof wind turbine projects; develop plans to use the savings resulting from the termination of the project at Cape Newenham, and develop plans to address cost overruns for the projects at Cape Lisburne and Cape Romanzof.

Management Comments and Our Response

The Department of the Air Force provided updated support for the projects and will recommend that the DUSD (I&E), cancel the project at Cape Newenham and continue with the projects at Cape Lisburne and Cape Romanzof. We agree with the recommendation to cancel the project at Cape Newenham; however, documentation provided by the Air Force does not fully support completing the wind turbine projects at Cape Lisburne and Cape Romanzof. As a result, we revised Recommendation 2 to elevate these issues to the DUSD (I&E). The DUSD (I&E), did not comment on the draft of this report. We request that the DUSD (I&E) provide comments by October 31, 2011. Please see the recommendations table on page ii.

* Planning for the project was already completed.

Recommendations Table

Management	Recommendations Requiring Comment	No Additional Comments Required
Deputy Under Secretary of Defense (Installations and Environment)	2.a, 2.b, 2.c, 2.d	
Commander, 611 th Civil Engineer Squadron		1

Please provide comments by October 31, 2011.

Table of Contents

Introduction	1
Objectives	1
Background	1
Review of Internal Controls	2
Audit Results for Recovery Act Wind Turbine Projects	3
Background on Planning for Recovery Act Wind Turbine Projects	4
Recovery Act Wind Turbine Projects Not Adequately Planned	5
Recovery Act Funds Properly Distributed	8
Initial Project Execution Generally Adequate; However,	
Contracting Action Originally Cited Incorrect Appropriation	8
Contractor Reported Required Information, but Cited Incorrect	
Treasury Appropriation Fund Symbol	9
Conclusion	9
Recommendations, Management Comments, and Our Response	10
Appendix. Scope and Methodology	13
Use of Computer-Processed Data	13
Use of Technical Assistance	14
Prior Coverage	14
Management Comments	
Department of the Air Force	15

Introduction

Objectives

Our overall objective was to evaluate DoD's implementation of Public Law 111-5, "American Recovery and Reinvestment Act of 2009," (Recovery Act), February 17, 2009. Specifically, we reviewed the planning, funding, initial project execution, and tracking and reporting of the wind turbine projects, each valued at \$4.7 million, located at long-range radar site(s) (LRRS) at Cape Lisburne, Cape Newenham, and Cape Romanzof, Alaska. We determined whether Air Force personnel complied with the Act's requirements, Office of Management and Budget (OMB) Memorandum M-09-10, "Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009," February 18, 2009, and subsequent related guidance.

The Recovery Act and OMB guidance require projects to be monitored and reviewed. For the purposes of this audit, we grouped these requirements into the following four phases: (1) planning, (2) funding, (3) initial project execution, and (4) tracking and reporting. See the appendix for a discussion of our scope and methodology.

Background

In passing the Recovery Act, Congress provided supplemental appropriations to preserve and create jobs; promote economic recovery; assist those most impacted by the recession; provide investments to increase economic efficiency by spurring technological advances in science and health; and invest in transportation, environmental protection, and other infrastructure. The Recovery Act also established unprecedented efforts to ensure the responsible distribution of funds for its purposes and to provide transparency and accountability of expenditures by informing the public of how, when, and where tax dollars were being spent. Further, the Recovery Act states that the President and heads of the Federal departments and agencies were to expend these funds as quickly as possible, consistent with prudent management.

Office of the Secretary of Defense memorandum, "Department of Defense Report to Congress on the Military Construction (MILCON) and Facilities Sustainment, Restoration, and Modernization (FSRM) Expenditure Plans for the American Recovery and Reinvestment Act of 2009," February 23, 2009, reinforces the Act's emphasis on swiftly expending funds and states that preference should be given to projects "that can be started and completed expeditiously, including a goal of using at least 50 percent of the funds for activities that can be initiated no later than 120 days after the date of the enactment of this Act." Additionally, the "American Recovery and Reinvestment Act of 2009, Department of Defense Energy Conservation Investment Program Plan," May 15, 2009 (updated June 2010), reinforces the Department's intent to swiftly expend funds by discussing the planning and design phase of the Recovery Act and selection of projects that were designated as "shovel-ready," hence, planning for the project was already completed.

DoD received approximately \$7.16 billion¹ in Recovery Act funds for projects that support the Act's purposes. In March 2009, DoD released an expenditure plan for the Recovery Act, which listed DoD projects that would receive Recovery Act funds. OMB Memorandum M-09-10 required DoD to develop plans for DoD programs. Included among those programs was the Energy Conservation Investment Program (ECIP). The DoD ECIP Plan identifies projects valued at \$120 million and funded through the "Military Construction – Recovery Act, Defense-Wide" appropriation. DoD personnel allocated \$17.2 million for Air Force Recovery Act ECIP projects. The Deputy Under Secretary of Defense (Installations and Environment) [DUSD (I&E)] centrally controls ECIP funding allocations on a project-by-project basis. Of the \$17.2 million, the Air Force received \$14.1 million for three wind turbine projects at Cape Lisburne LRRS, Cape Newenham LRRS, and Cape Romanzof LRRS, each valued at \$4.7 million.

The "Department of Defense Energy Manager's Handbook," August 25, 2005, defines a savings-to-investment ratio (SIR) as a measure of a project's economic performance. The SIR, a benefit-to-cost ratio in which the benefits are primarily savings, expresses the relationship between the present value of the savings over the study period to the present value of the investment costs. The SIR is a useful means of ranking independent projects to guide allocations for limited investment funding. According to the handbook, if a project's SIR is 1.0 or higher, the project is cost-effective.

Air Force Civil Engineer Support Agency

Air Force Civil Engineer Support Agency (AFCESA) provides professional readiness, energy and operations support, tools, and practices to maximize Air Force civil engineer capabilities in base and contingency operations. These services included programming, planning, and design of energy projects; conducting technical evaluations of the proposals received after solicitation; and awarding the contracts for Air Force ECIP projects.

Review of Internal Controls

DoD Instruction 5010.40, "Managers' Internal Control Program (MICP) Procedures," July 29, 2010, requires DoD organizations to implement a comprehensive system of internal controls that provides reasonable assurance programs are operating as intended and to evaluate the effectiveness of the controls. We identified an internal control weakness in the administration of the three wind turbine projects as defined by DoD Instruction 5010.40. Specifically, personnel at the 611th Civil Engineer Squadron (CES) did not provide adequate internal controls over the planning for the three wind turbine projects. We discuss these issues in detail in the Audit Results section of this report. We will provide a copy of the report to the senior officials responsible for internal controls at the Office of the DUSD (I&E) and the Air Force.

¹ DoD originally received about \$7.42 billion; however, Public Law 111-226, Title III, "Rescissions," rescinded \$260.5 million on August 10, 2010. The \$7.16 billion does not include \$4.6 billion for the U.S. Army Corps of Engineers Recovery Act civil works projects.

Audit Results for Recovery Act Wind Turbine Projects

Personnel at the 611th CES did not ensure that the three wind turbine projects at Cape Lisburne LRRS, Cape Newenham LRRS, and Cape Romanzof LRRS were adequately planned.

- Personnel at the 611th CES did not provide documentation to support the DD Forms 1391, “Military Construction Project Data” or the Life-Cycle Cost (LCC) analyses calculations because of multiple turnovers in project managers and a file server migration that resulted in the loss of several project files. Although the DD Forms 1391 and LCC analyses showed that SIRs and payback periods² were potentially within DoD guidance, a technical evaluation performed by AFCESA personnel determined that each proposal’s SIR and payback periods did not meet DoD guidance, and the three wind turbine projects may not be cost-effective.
- Before DUSD (I&E) selected the wind turbine projects for Recovery Act funding, personnel at the 611th CES did not first ensure the wind studies had been completed and therefore, that the projects were shovel-ready.

As a result, DoD cannot ensure that the three wind turbine projects are viable, that DUSD (I&E) personnel appropriately selected the projects for Recovery Act funding, and that Recovery Act funds were appropriately used.

Air Force personnel distributed funds to AFCESA for the three wind turbine projects in a timely manner, and the funding authorization documents properly identified a Recovery Act designation. Although contracting personnel at AFCESA ensured that contracting actions for the three wind turbine projects generally were executed appropriately, they originally cited an incorrect appropriation in the task order. Finally, the contractor reported the required recipient Recovery Act information; however, the contractor did not report the correct Treasury Appropriation Fund Symbol (TAFS) to the www.recovery.gov Web site. As a result of our review, officials at AFCESA took action to correct the errors in the appropriation and recipient reporting. DoD now has reasonable assurance the use of Recovery Act funds was clear and transparent to the public.

² The amount of time it will take to recover the initial investment in energy savings.

Background on Planning for Recovery Act Wind Turbine Projects

Figure. Prototype Wind Turbine at Tin City Long-Range Radar Site



Tin City Long-Range Radar Site Selected as Test Site

Idaho National Laboratory prepared a report for Pacific Air Forces to evaluate the possibility of wind power application at four LRRSs in Alaska. An assessment team of Air Force and contractor personnel conducted site visits in October and December of 2002. DoD personnel selected Tin City as the test site and provided funding to create a prototype facility. Air Force personnel planned on monitoring the test site to determine the energy savings that can be realized in power production systems at remote sites. In July 2006 contracting personnel at Elmendorf Air Force Base drafted a contract with a \$2.0 million option to construct the Tin City wind turbine. The Air Force exercised the option in June 2007, and according to 611th CES personnel, contractors completed construction in October 2008. However, the wind turbine was not operational as of July 29, 2011.

Test Site Wind Turbine Project Continues to Experience Delays

Following are issues identified from the wind turbine project at the Tin City LRRS.

- Completing a wind study would have provided 611th CES personnel the information necessary to determine the most advantageous location at which to build the turbine. Because 611th CES personnel did not complete a wind study at Tin City before construction, the turbine is located in an area with turbulent winds, and therefore, according to 611th CES personnel, produces sporadic, unusable power.

Because 611th CES personnel did not complete a wind study at Tin City before construction, the turbine is located in an area with turbulent winds, and therefore, according to 611th CES personnel, produces sporadic, unusable power.

- Because the wind turbine was not yet operational, in August 2009, contracting personnel at Elmendorf Air Force Base awarded a contract modification valued at \$485,000 to further fund and complete the project. This funding covered the costs of a study for correcting power integration issues and implementing the corrections. In September 2010, the contract period of performance was extended to December 31, 2010, because of Government delays on the design approval that addressed the power integration issues.
- Finally, high wind testing needed to be completed before the 611th CES and the contractor could commission the wind tower. Because of erratic wind conditions, the contractor had not completed tests as of February 11, 2011.

As of July 29, 2011, the wind turbine was still not operational and continued to incur costs. DoD cannot quantify actual cost savings generated from the wind turbine until the contractor completes all modifications to power production and 611th CES personnel measure overall operational performance.

Recovery Act Wind Turbine Projects Not Adequately Planned

Personnel at the 611th CES did not ensure that the three wind turbine projects were adequately planned to meet the minimum SIR and payback criteria defined in DoD guidance, and the three wind turbine projects may not be cost-effective. Additionally, personnel at the 611th CES did not ensure the wind turbine projects were shovel-ready before DUSD (I&E) personnel selected the projects for Recovery Act funding.

No Documentation Supporting Project Costs, and SIR and Payback Periods Are Potentially Outside Criteria Guidelines

611th CES personnel provided no documentation to support the DD Forms 1391 or the potential investment costs and energy and non-energy savings on the LCC analyses for the three wind turbine projects. Although the DD Forms 1391 and LCC analyses showed that SIRs and payback periods potentially met DoD guidance, a technical evaluation performed by AFCESA personnel determined that each proposal's SIR and payback periods did not meet DoD guidance, and the three wind turbine projects may not be cost-effective.

Lack of Documentation to Support Calculations on DD Forms 1391

According to Office of the Assistant Secretary of Defense (Production and Logistics) “Energy Conservation Investment Program Guidance,” March 17, 1993, project submittals will include copies of the LCC analyses with supporting documentation showing basic assumptions made in arriving at projected savings. The guidance also states that Military Departments should maintain current, auditable documentation on the execution status and the projected and realized savings for each ECIP project and should revalidate all projects prior to advertising to ensure contemplated benefits will still accrue.

Personnel at the 611th CES stated they could not provide documented cost support because of multiple turnovers in project managers and a file server migration resulting in the loss of several project files. In addition, 611th CES personnel stated that part of the costing methodology they used to create the estimates for the wind turbine projects included the costs incurred in building the wind turbine in Tin City. However, they were still unable to provide actual calculations and the supporting documentation.

Part of AFCESA's mission is to provide technical expertise in programming, planning, and design of energy projects. The audit team discussed the DD Forms 1391 and the lack of supporting documentation with the Professional Engineers at AFCESA. AFCESA Professional Engineers offered their opinions and assumptions on the projects. They maintained that a Professional Engineer's opinion should be enough to support the project costs submitted by the 611th CES. DUSD (I&E) personnel stated that they do consider a Professional Engineer's opinion valid support for the cost estimates, but only if the opinion is supported by research on elements of the costs and then documented and included with the DD Forms 1391. Furthermore, because the wind turbine at Tin City remained non-operational and was still incurring costs as of July 29, 2011, the DD Forms 1391 prepared by 611th CES personnel may be unreliable as a basis for projected savings. Without adequate documentation of assumptions made; detailed breakouts of construction costs, energy and non-energy savings; and evidence of research for cost support, DoD cannot ensure that payback periods and SIR calculations are accurate and reliable on the DD Forms 1391 or the LCC analyses for the three wind turbine projects, or that DUSD (I&E) personnel appropriately selected the projects for Recovery Act funding.

SIR and Payback Periods on the Technical Evaluation Less Favorable Than Those on DD Forms 1391

Title 10, Code of Federal Regulations, Part 436, and the DoD Energy Manager's Handbook state that projects are cost-effective when the SIR is estimated to be 1.0 or higher. Moreover, the DoD ECIP Plan indicates that ECIP projects are focused on improving the energy efficiency of existing DoD facilities and creating new energy generation sources on military installations in a cost-effective manner.

The Office of the Assistant Secretary of Defense (Production and Logistics), "Energy Conservation Investment Program Guidance," March 17, 1993, also states "projects must have a SIR greater than 1.25 and a discounted³ payback period of 10 years or less." Although the DD Forms 1391 and LCC analyses cited SIRs of 1.57 and 1.59 respectively, with project payback periods of 9 years each, 611th CES did not adequately support the DD Forms 1391 and the SIR and payback periods are potentially inaccurate. However, as part of the technical evaluation, a Professional Engineer working for AFCESA used cost data from the contractors' proposals to recalculate SIRs and payback periods. These calculations resulted in project payback beyond the economic life of the wind turbines and SIRs of less than 1.0.

³ Similar to simple payback in expressing results in time to recover investment costs; however, savings are discounted to their present value based on the discount rate.

Even though the SIRs and payback periods on the technical evaluation were outside the designated criteria guidelines, AFCESA contracting personnel awarded the task order for

Even though the SIRs and payback periods on the technical evaluation were outside the designated criteria guidelines, AFCESA contracting personnel awarded the task order for all three wind turbine projects.

all three wind turbine projects. Without proper planning of the Recovery Act project, DUSD (I&E) personnel may not have appropriately selected the projects for Recovery Act funding. Consequently, DoD cannot ensure the three wind turbine projects were an appropriate use of Recovery Act funds, and AFCESA awarding the projects

may not be in compliance with the intent of Federal regulation, DoD guidance, and the Recovery Act's requirement for prudent management of funds.

We brought these issues to the attention of AFCESA and 611th CES personnel, and on August 12, 2010, they stated that they had recently revalidated the SIRs and project payback periods for the three wind turbine projects. They also stated that the revalidated results were more favorable than those of the original DD Forms 1391 and agreed to provide the audit team documentation for, and results of, the revalidation. However, they never provided the documentation. Accordingly, our conclusions are based on the documentation available in 2009.

Projects Not Shovel-Ready

Personnel at the 611th CES did not first ensure the wind studies had been completed and therefore, that the projects were shovel-ready before DUSD (I&E) personnel selected the projects for Recovery Act funding. According to the DoD ECIP Plan, planning for the three wind turbine projects should have been completed, which would ensure that the projects were shovel-ready. Additionally, according to an August 11, 2009, Pacific Northwest National Laboratory study, wind studies can confirm whether sufficient and consistent winds are available at sites for wind power production. The report further states that when determining site locations, "measuring the actual wind resource at the site for a year and correlating the data to data from a longer term reference station in the area will help confirm the viability of the site for wind power production." Moreover, data from wind studies is helpful in calculating the expected overall energy savings, thus potentially impacting the SIR and payback period calculations for the three wind turbine projects.

At the time of our site visit, the Statement of Work required an 8-month wind study. However, lessons learned from the Tin City project demonstrated a clear need for a 1-year wind study before project implementation to determine the best physical location for the wind turbine tower. Because of our review and before awarding the contract, personnel at the 611th CES requested, and AFCESA contracting personnel revised, the Statement of Work from an 8-month to a 1-year wind study at each LRRS.

Although there is no requirement to complete wind studies before submitting DD Forms 1391, personnel with the DUSD (I&E) and the Air Force ECIP Manager

stated that they had expected wind studies to have been completed before they received the DD Forms 1391 with support documentation and that they were unaware this was not the case for the three wind turbine projects. In March 2010, DUSD (I&E) cancelled an Army Recovery Act wind turbine project at Fort Wainwright, Alaska, from the Recovery Act program because of the lack of planning and lack of wind study completion. The reprogramming action cited that the project could not be awarded because wind tests would not be completed in a timely manner. DUSD (I&E) cancelled the project because of unavoidable execution delays—avoiding unnecessary execution delays is one of the Recovery Act accountability objectives. The reprogramming action also cited that the Army is using the funds to award two new projects that comply with the intent of the Recovery Act. The 611th CES did not provide sufficient information to DUSD (I&E) to ensure that the three wind turbine projects were shovel-ready, the projects were viable, and that Recovery Act funds were appropriately used.

Recovery Act Funds Properly Distributed

Air Force personnel distributed funds to AFCESA for the three wind turbine projects in a timely manner, and the funding authorization documents properly identified a Recovery Act designation. Funding documents cited a TAFS of 97 0501, “Military Construction-Recovery Act, Defense-Wide” appropriation, and the amount of funds received agreed with the project estimates of \$4.7 million for each wind turbine as stated in the DoD ECIP Plan. Funding documents showed that Air Force personnel transferred Recovery Act funds to AFCESA on September 23, 2009, in time for AFCESA contracting personnel to award the task order on September 26, 2009.

Initial Project Execution Generally Adequate; However, Contracting Action Originally Cited Incorrect Appropriation

Contracting personnel at AFCESA ensured that the contracting actions were generally executed appropriately; however, contracting personnel at AFCESA did not cite the correct appropriation on the task order. As required by OMB Memorandum M-09-10, contracting personnel at AFCESA posted contract pre-solicitations for the three wind turbine projects to the Federal Business Opportunities (FBO) Web site and appropriately posted three separate pre-solicitation announcements. They also properly identified the three wind turbine projects as “Recovery” and included the appropriate “For Information Purposes Only” statement in the synopsis.

On September 26, 2009, contracting personnel at AFCESA awarded the three wind turbine projects competitively on task order 0009 under contract FA-3002-08-D-0005 at a firm-fixed-price to CH2M Hill Constructors, Inc., (CH2M Hill). AFCESA advertised the projects to contractors eligible to receive awards under the Sustainment, Restoration, and Modernization Acquisition Task Order Contract. According to AFCESA personnel, this program includes 20 contractors that fall under classifications such as 8(a), HUBZone, and Service-Disabled Veteran-Owned Small Businesses. Contracting personnel at AFCESA awarded the three wind turbine projects within the estimated project costs in the DoD ECIP Plan. CH2M Hill was properly registered in the Central Contractor

Registration database and was not listed in the Excluded Parties List System. Additionally, contracting personnel at AFCESA posted the three Recovery Act award notices and identified the three wind turbine projects as “Recovery.” They also included all required Recovery Act Federal Acquisition Regulation (FAR) clauses in a contract modification.

However, when they awarded the task order, contracting personnel at AFCESA incorrectly cited 979 DF9 1576 as the appropriation, instead of “Military Construction-Recovery Act, Defense-Wide” appropriation 97 0501. As a result of our review, AFCESA contracting personnel modified the contract to correct the appropriation. DoD now has reasonable assurance that the use of Recovery Act funds was clear and transparent to the public.

Contractor Reported Required Information, but Cited Incorrect Treasury Appropriation Fund Symbol

The contractor, CH2M Hill, reported the required recipient Recovery Act information. The contractor reported the number of jobs, a description of quarterly project activities, and the total dollar value for the task order award to www.recovery.gov as required by FAR 52.204-11. However, the contractor used an incorrect TAFS in the report.

CH2M Hill incorrectly reported the TAFS code as 57 3307, “Military Construction-Recovery Act, Air Force” instead of 97 0501, “Military Construction-Recovery Act, Defense-Wide.” As a result of our review, AFCESA contracting personnel stated that they notified CH2M Hill of its error, and the contractor then cited the correct TAFS in the fourth quarter FY 2010 posting; however, the contractor did not go back and correct the incorrect TAFS cited in previous quarterly reports. Because action by management prompted the contractor to meet the intent of the finding, we are not recommending further corrective action. DoD now has reasonable assurance that the use of Recovery Act funds was clear and transparent to the public.

Conclusion

Personnel at the 611th CES did not ensure that the three wind turbine projects were properly planned and supported. As a result, DoD cannot ensure that the three wind turbine projects are viable, that DUSD (I&E) personnel appropriately selected the projects for Recovery Act funding, and that Recovery Act funds were appropriately used.

We fully support renewable energy projects; however, executing the Recovery Act projects at Cape Lisburne, Cape Newenham, and Cape Romanzof LRRSs may not be compliant with Federal, DoD, and Recovery Act guidance. Without documented support for the potential investment costs, and energy and non-energy savings on the LCC analyses, DoD cannot ensure whether the calculations were correct, whether the discounted payback periods and SIRs met the minimum DoD criteria, and that DUSD (I&E) personnel appropriately selected the projects for Recovery Act funding. Although it may be appropriate to use Recovery Act funds for conducting wind studies to determine the viability of future wind turbine projects at Alaska LRRSs, the projects were not shovel-ready and may be cost-ineffective. 611th CES personnel should revalidate the SIRs and payback periods of the projects. DUSD (I&E) should consider the results of the

revalidations, results of the wind studies, and potential costs of alternatives considered such as termination costs, to determine the best course of action for the construction portion of the wind turbine contract.

Recommendations, Management Comments, and Our Response

Revised Recommendations

As a result of management comments, we revised Recommendation 2 to include four subparts. We explain the revisions in our responses to management comments below.

1. We recommend that the Commander, 611th Civil Engineer Squadron, prepare supporting documentation, including the results of the 1-year wind studies, and revalidate the discounted payback periods and savings-to-investment ratios on the Life-Cycle Cost Analysis summaries.

Department of the Air Force Comments

The Assistant Deputy Chief of Staff, Logistics, Installations and Mission Support for the Headquarters U.S. Air Force, provided comments on behalf of the Department of the Air Force. She agreed with the Recommendation and stated that they provided the supporting documentation requested, including the 1-year wind studies and updated LCC analyses for Cape Romanzof and Cape Lisburne. The Assistant Deputy Chief of Staff, stated that the revalidation effort resulted in a SIR of 1.15 for Cape Lisburne and a SIR of 1.29 for Cape Romanzof. Additionally, she stated that Cape Newenham has strong wind, but too much turbulence for a wind turbine and the project will be recommended for cancellation. Also, attached to her comments were the “35% Design” submittal, June 4, 2010, and cost overrun information for the three wind turbine projects.

Our Response

The comments of the Assistant Deputy Chief of Staff, were partially responsive. The methodology used by the Air Force in performing the LCC analyses was reasonable. The updated LCC analyses reflected payback periods of approximately 17 and 15 years for the wind turbine projects at Cape Lisburne and Cape Romanzof, respectively. However, we were not able to validate the updated SIR and payback periods provided by the Air Force because the Air Force did not provide support for the predicted/estimated fuel consumption numbers (a key component to calculate the estimated gallons of diesel fuel saved) for the Cape Lisburne and Cape Romanzof LRRSs.

We used the attachments provided by the Assistant Deputy Chief of Staff, to calculate that the three wind turbine projects have each experienced approximately \$1 million in cost overruns (based on 2012 construction costs) over the DoD approved \$4.7 million for each wind turbine project. During a meeting on July 29, 2011, with Air Force officials to discuss their comments on the draft report, the Air Force stated that the deadline for procuring wind turbines in time for 2012 construction to occur is close-at-hand and if construction is delayed further, construction costs will continue to escalate thus impacting the SIR and payback periods of the projects even further. The Under Secretary of

Defense (Comptroller)/Chief Financial Officer issued two memoranda providing guidance on the handling of project cost variations, including cost overruns and cancelling Recovery Act projects. Because the DUSD (I&E) centrally controls ECIP funding, we address this issue in the added Recommendation 2.d.

We agree with the Air Force's decision to recommend cancellation of the wind turbine project at Cape Newenham, but continue to question the cost-effectiveness of the wind turbine projects at Cape Lisburne and Romanzof. Rather than ask the Air Force for additional supporting documentation, we will elevate the issues to the DUSD (I&E) in Recommendation 2.b and 2.c to ensure that the LCC analyses are accurate before determining the best course of action for the wind turbine projects at Cape Lisburne and Cape Romanzof.

2. We recommend that the Deputy Under Secretary of Defense (Installations and Environment):

- a. Cancel the wind turbine project at Cape Newenham,**
- b. Work directly with the Air Force to validate the LCC analyses for the wind turbine projects at Cape Lisburne and Cape Romanzof,**
- c. Determine the best course of action for the construction portion of the Cape Lisburne and Cape Romanzof wind turbine projects, taking into consideration the results of the savings-to-investment ratio and payback period revalidations, results of the wind studies, the cost overruns, and other costs of options considered, and**
- d. Develop plans to use the savings resulting from the termination of the wind turbine project at Cape Newenham and develop plans to address cost overruns for the projects at Cape Lisburne and Romanzof in accordance with Under Secretary of Defense (Comptroller)/Chief Financial Officer memorandum, "Project Cost Variations During Execution of American Recovery and Reinvestment Act Expenditure Plans for Infrastructure Investments," May 7, 2009, and "Revision to Policy Regarding Project Cost Variations during execution of American Recovery and Reinvestment Act Expenditure Plans for Infrastructure Investments," January 11, 2010.**

Management Comments Required

The DUSD (I&E), did not comment on a draft of this report. We request that the DUSD (I&E), provide comments on the final report.

Department of the Air Force Comments

Although not required to comment, the Assistant Deputy Chief of Staff, Logistics, Installations and Mission Support for the Headquarters U. S. Air Force, provided comments on behalf of the Department of the Air Force. She stated that they will provide a recommendation to the DUSD (I&E) to continue with construction of the wind turbines

at Cape Lisburne and Cape Romanzof but will recommend cancelling construction at Cape Newenham.

Our Response

We agree with the Air Force's recommendation to cancel the wind turbine project at Cape Newenham and added Recommendation 2.a.

Documentation provided by the Air Force in response to Recommendation 1 does not fully support the Air Force's recommendation to move forward with the wind turbine projects at Cape Lisburne and Cape Romanzof. We added Recommendation 2.b to elevate the issue to the DUSD (I&E).

Appendix. Scope and Methodology

We conducted this audit from August 2009 through May 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The overall objective was to evaluate DoD's implementation of plans for the Recovery Act. To accomplish our objective, we audited the planning, funding, initial project execution, and tracking and reporting of three wind turbine projects at Cape Lisburne LRRS, Cape Newenham LRRS, and Cape Romanzof LRRS, each valued at \$4.7 million. Specifically, we determined whether:

- the selected projects were adequately planned to ensure the appropriate use of Recovery Act funds (Planning);
- funds were awarded and distributed in a prompt, fair, and reasonable manner (Funding);
- contracts awarded were transparent, competed, and contained required Recovery Act FAR clauses (Initial Project Execution); and
- recipients' use of funds was transparent to the public, and the benefits of the funds were clearly, accurately, and timely reported (Tracking and Reporting).

We interviewed personnel from the 611th CES, AFCESA, Air Force Recovery Act Manager, Air Force ECIP Manager, and DUSD (I&E). We toured the Tin City LRRS where the test site wind turbine is located. We reviewed documentation including the official contract files and the DD Forms 1391 for project requirements, justification, cost estimate support, environmental analysis, and historical data that provided costing support. We reviewed Federal, DoD, and Air Force guidance. Although we determined whether the contractor reported in accordance with FAR 52.204-11 and reviewed the data for reasonableness, we did not validate the data reported by the contractor to the www.recovery.gov Web site at this time.

Use of Computer-Processed Data

We relied on computer-processed data from the FBO Web site, the Federal Procurement Data System-Next Generation, the LCC program, the Excluded Parties List System, the Commanders' Resource Integration System, and the Central Contractor Registration. FBO is a Government-wide single entry point for Federal Government procurement opportunities. Federal Procurement Data System-Next Generation is a dynamic, real-time database in which contracting officers can update data to include new actions, modifications, and corrections. The LCC provides computational support for the analysis of capital investments in buildings. The Excluded Parties List System is a Web site that disseminates information on parties that are excluded from receiving Federal Contracts. The Commanders' Resource Integration System is a data warehouse/decision support

system, which provides a set of query, analysis, and reporting tools to access data from multiple financial, logistics, and personnel legacy systems for Air Force personnel. The Central Contractor Registration is the primary registrant database for Federal Government contractors. The database validates, stores, and disseminates data in support of agency acquisition missions. We compared data generated by each system with the DoD Expenditure Plans, funding authorization documents, project documentation, and contracting documentation to support the audit conclusions. We determined that the data were sufficiently reliable for the purposes of our report.

Use of Technical Assistance

Before selecting DoD Recovery Act projects for audit, the Quantitative Methods and Analysis Division of the DoD Office of Inspector General analyzed all DoD agency-funded projects, locations, and contracting oversight organizations to assess the risk of waste, fraud, and abuse associated with each. Quantitative Methods and Analysis Division personnel selected most audit projects and locations using a modified Delphi technique, which allowed them to quantify the risk based on expert auditor judgment and other quantitatively developed risk indicators. They used information collected from all projects to update and improve the risk assessment model. Quantitative Methods and Analysis Division personnel initially selected 83 projects with the highest risk rankings, with auditors choosing some additional projects at selected locations. The audit team selected the three wind turbine projects to provide coverage of the ECIP.

Quantitative Methods and Analysis Division personnel did not use classical statistical sampling techniques that would permit generalizing results to the total population because there were too many potential variables with unknown parameters at the beginning of this analysis. The predictive analytic techniques employed provided a basis for logical coverage of Recovery Act dollars being expended, but also for types of projects and types of locations across the Military Services, Defense agencies, State National Guard units, and public works managed by the U.S. Army Corps of Engineers.

Prior Coverage

The Government Accountability Office, the Department of Defense Inspector General, and the Military Departments have issued reports and memoranda discussing DoD projects funded by the Recovery Act. You can access unrestricted reports at <http://www.recovery.gov/accountability>.

Department of the Air Force Comments



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

MEMORANDUM FOR DOD INSPECTOR GENERAL
ATTN: [REDACTED]

JUL 07 2011

FROM: HQ USAF/A4/7
1030 Air Force Pentagon
Washington, DC 20330-1030

SUBJECT: ARRA Wind Turbine Projects at Long-Range Radar Sites in Alaska Were Not
Adequately Planned (Project No. D2009-D000LF-0245.003)

We concur with comments on both recommendations in the DoD Inspector General Draft Report on the wind turbine construction at Cape Lisburne, Cape Newenham, and Cape Romanzof, Alaska. Specific management comments are attached.

If you have questions, please contact [REDACTED]

A handwritten signature in black ink, appearing to read "Patricia Young".
PATRICIA M. YOUNG, SES
Asst DCS/Logistics, Installations &
Mission Support



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

Office of the Inspector General, DoD
ARRA Wind Turbine Projects at Long-Range Radar Sites in Alaska Were Not Adequately
Planned
(Project No. D2009-D000LF-0245.003)

DoD/IG Recommendation 1: "We recommend that the Commander, 611th Civil Engineer Squadron prepare supporting documentation, including the results of the 1-year wind studies, and revalidate the discounted payback periods and savings-to-investment ratios on the Life-Cycle Cost Analysis summaries."

AF/A4/7 Comments:

1. Concur.

PACAF/A7 has attached the information prepared by the Commander, 611th Civil Engineer Squadron and provided the requested supporting documentation, including the one-year wind studies and a revalidated Life-Cycle Cost Analysis. This documentation shows that Cape Lisburne and Cape Romanzof are valid projects with savings-to-investment ratios of 1.15 and 1.29 respectively. Cape Newenham has strong wind, but too much turbulence for a wind turbine and will be cancelled.

DoD/IG Recommendation 2: "We also recommend that the Deputy Under Secretary of Defense (Installations and Environment) determine the best course of action for the construction portion of the wind turbine contract, taking into consideration the revalidation and wind study results, and costs of other options considered."

AF/A4/7 Comments:

2. Concur. AF/A7C will:

Provide our recommendation to continue with construction of wind turbines at Cape Lisburne and Cape Romanzof and to cancel construction at Cape Newenham to the Deputy Under Secretary of Defense (Installations and Environment). Status: Open; Estimated Completion Date: 24 Jul 11

Supporting documentation omitted because of length. Copies will be provided upon request.

Recommendation revised to include four subparts.

NIST BLCC 5.3-10: ECIP Report

Consistent with Federal Life Cycle Cost Methodology and Procedures, 10 CFR, Part 436, Subpart A.

The LCC calculations are based on the FEMP discount rates and energy price escalation rates updated on April 1, 2010.

Location:	Alaska	Discount Rate:	3%
Project Title:	Cape Lisburne Wind Project Analyst: [REDACTED]		
Base Date:	June 1, 2011	Preparation Date:	Tue Jun 21 08:27:12 HST 2011
BOD:	October 1, 2012	Economic Life:	20 years 0 months
File Name:	C:\Users\colton.walter\Documents\Alaska\611\Wind Generation Projects\3-Capes Wind Project\BLCCs\Documentation\June 11 Tasker recalc-Lisburne.xml		

1. Investment

Construction Cost	\$5,651,299
SI OH	\$0
Design Cost	\$0
Total Cost	\$5,651,299
Salvage Value of Existing Equipment	\$0
Public Utility Company	\$0
Total Investment	\$5,651,299

2. Energy and Water Savings (+) or Cost (-)

Base Date Savings, unit costs, & discounted savings

Item	Unit Cost	Usage Savings	Annual Savings	Discount Factor	Discounted Savings
Distillate Fuel Oil (#1, #2)	\$39.54149	8,347.2 MBtu	\$330,060	19.513	\$6,440,577
Energy Subtotal					\$6,440,577
Water Subtotal	0.0 Mgal		\$0		\$0
Total			\$330,060		\$6,440,577

3. Non-Energy Savings (+) or Cost (-)

Item	Savings/Cost	Occurrence	Discount Factor	Discounted Savings/Cost
Annually Recurring	\$5,653	Annual	13.977	\$79,014
Non-Annually Recurring				
Non-Annually Recurring Subtotal	\$0			\$0
Total	\$5,653			\$79,014

BLCC Report

4. First year savings	\$335,714
5. Simple Payback Period (in years)	16.83 (total investment/first-year savings)
6. Total Discounted Operational Savings	\$6,519,591
7. Savings to Investment Ratio (SIR)	1.15 (total discounted operational savings/total investment)
8. Adjusted Internal Rate of Return (AIRR)	3.74% (1+d)*SIR/(1/n)-1; d=discount rate, n=years in study period

NIST BLCC 5.3-10: ECIP Report

Consistent with Federal Life Cycle Cost Methodology and Procedures, 10 CFR, Part 436, Subpart A

The LCC calculations are based on the FEMP discount rates and energy price escalation rates updated on April 1, 2010.

Location:	Alaska	Discount Rate:	3%
Project Title:	Cape Romanzof Wind Project		
Base Date:	June 1, 2011	Preparation Date:	Tue Jun 21 08:29:47 HST 2011
BOD:	October 1, 2012	Economic Life:	20 years 0 months
File Name:	C:\Users\colton.walter\Documents\Alaska\611\Wind Generation Projects\3-Capes Wind Project\BLCCs\Documentation\June 11 Tasker recalc-Romanzof.xml		

1. Investment

Construction Cost	\$5,784,015
SIOH	\$0
Design Cost	\$0
Total Cost	\$5,784,015
Salvage Value of Existing Equipment	\$0
Public Utility Company	\$0
Total Investment	\$5,784,015

2. Energy and Water Savings (+) or Cost (-)

Base Date Savings, unit costs, & discounted savings

Item	Unit Cost	Usage Savings	Annual Savings	Discount Factor	Discounted Savings
Distillate Fuel Oil (#1, #2)	\$41.69742	9,106.0 MBtu	\$379,698	19.513	\$7,409,170
Energy Subtotal			\$379,698		\$7,409,170
Water Subtotal	0.0 Mgal		\$0		\$0
Total			\$379,698		\$7,409,170

3. Non-Energy Savings (+) or Cost (-)

Item	Savings/Cost	Occurrence	Discount Factor	Discounted Savings/Cost
Annually Recurring	\$5,653	Annual	13.977	\$79,014
Non-Annually Recurring				
Non-Annually Recurring Subtotal	\$0			\$0
Total	\$5,653			\$79,014

BLCC Report

4. First year savings	\$385,351
5. Simple Payback Period (in years)	15.01 (total investment/first-year savings)
6. Total Discounted Operational Savings	\$7,488,184
7. Savings to Investment Ratio (SIR)	1.29 (total discounted operational savings/total investment)
8. Adjusted Internal Rate of Return (AIRR)	4.34% (1+d)*SIR/(1/n)-1; d=discount rate, n=years in study period



Inspector General Department of Defense